HONDIUS WATER LINE
(Hondius-Beaver Water Delivery System)
(Hondius-Beaver Pipeline)
1.6 miles northwest of Park Headquarters
Building and 1 mile northwest of
Beaver Meadows Entrance Station
Rocky Mountain National Park
Estes Park Vicinity
Larimer County
Colorado

HAER No. CO-85

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
Rocky Mountain System Support Office
National Park Service
P.O. Box 25287
Denver, Colorado 80225-0287

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HISTORIC AMERICAN ENGINEERING RECORD

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HAER No. CO-85

Location:	1.6 miles northwest of Park Headquarters Building and 1 mile northwest of Beaver Meadows Entrance Station, Rocky Mountain National Park, Estes Park Vicinity, Larimer County, Colorado.
Quad:	Longs Peak, Colorado
UTM:	Intake - 13/447600/4469280 Buck Creek - 13/451460/4469280
Date of Construction:	1906 - 1927
Fabricator:	Pieter Hondius, Sr.
Present Owner:	National Park Service
Present Use:	Abandoned (1996)
Significance:	The Hondius Water Line is a symbol of the transition from agriculture to tourist-related industries in the Estes Park area which eventually culminated in the formation of Rocky Mountain National Park. Constructed and engineered by Pieter Hondius, Sr., the pipeline served as the primary water supply to the High Drive area from 1907 until 1996. The line represents a unique engineering design, climbing a 260 foot ridge at one point using advanced siphoning techniques. Mr. Hondius was a practical man with no formal engineering training. His pipeline is a testament to the "get the job done" innovation that characterizes many of the area's pioneers.
Historian:	Michael J. Smith, September 1997.
Photographer:	Lisa Lynch, September 1997.

A HISTORY OF THE HONDIUS WATER LINE

I. THE NEED FOR WATER - BACKGROUND

In 1896 Pieter Hondius arrived in Estes Park. A naturalized citizen originally from Holland, Hondius had come to the high mountain parklands to escape the ravages of asthma. In the Estes Valley he found striking mountain meadows dotted with tiny homesteads. He also found an opportunity to run a cattle ranch.

Much like Hondius, the earliest settlers in the area dreamed of agriculture with a beautiful view. Here, at an elevation of 8000 feet above sea level attempts were made to grow timothy hay in an inhospitable climate. To the west of the montane parklands the Continental Divide rose to over 13,000 feet. The area's first settlers, Joel Estes and his family, tried to work the land between 1860 and 1866. Their attempts at agriculture and cattle raising failed and they left little behind but the remains of their cabin on Fish Creek. In 1868, Griffith Evans and James Nugent picked up where the Estes family left off. However their agricultural activities began to take the backseat to hosting visitors to the park which, most concluded, was stunning in its beauty. In many ways, Evans and Nugent became an early Chamber of Commerce for the rolling parklands.[1]

The tide of agriculturalists and cattlemen soon began to swell. In 1872, Wyndham Thomas

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[1] Many books trace the early history of Estes Park. See especially F. Ross Holland, Jr.'s *Rocky Mountain National Park Historical Background Data*, (Washington D.C.: U.S. Department of the Interior, 1971) and Chapter 2 of C. W. Buchholtz's *Rocky Mountain National Park; A History*, (Boulder: Colorado Associated University Press, 1983).

Wyndham-Quin, 4th Earl of Dunraven visited Griff Evans and the park and decided to establish a large cattle ranch and hunting reserve. Lord Dunraven attempted to control the entirety of the Estes Valley, but squatters and legitimate homesteaders kept showing up. By 1875, Abner Sprague had laid claim to Moraine Park and the MacGregor family had moved into the mouth of the Black Canyon. William James and his family took up land along the Fall River west of the park.[2] These were but a few of the many people trying to establish legitimate farming and ranching operations. The choice sites with easy access to water were soon claimed.

But as the seasons changed tourists began to replace cattle in the grasslands below Long's Peak. Many visitors, including Lord Dunraven and travelling author Isabella Bird, found lodging at Griff Evan's homestead.[3] People also began to stay at the James's ranch, prompting William James to open the Elkhorn Hotel in 1877.[4] That same year, Lord Dunraven opened the English Hotel on his cattle ranch. By 1904, Estes Park could boast of four hotels: The English, The Elkhorn, Stead's (formerly Sprague's) Ranch, and The Highlands. In addition, The Rustic was under construction.[5] The opening of these first accommodations in Estes Park was merely a beginning of the shift from an agricultural to a tourist-based economy. June Carothers captures this transformation when she

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[2] Eleanor Estes Hondius, *Memoirs of Eleanor E. Hondius of Elkhorn Lodge*, (Boulder: Pruett, 1964), p. 6.

[3] See Isabella Bird's *A Lady's Life in the Rocky Mountains*, (Norman, University of Oklahoma Press, 1960) for descriptions of early park accommodations. Also see Florence Johnson Shoemaker's Thesis "The Story of the Estes-Rocky Mountain National Park Region," M.A. thesis, Colorado State College of Education, 1940, especially chapter nine.

[4] Eleanor Estes Hondius, *Memoirs*, p. 6.

[5] Florence J. Shoemaker, "Story of Estes Park Region," p. 76.

writes, "These early settlers were soon occupied with caring for the visitors and they were not reluctant to assume their new role as hosts. In the words of one settler, 'Before the tourists came to Estes Park it was only a cattle ranch and not a very good one at that.'"[6]

The need for water shifted from simple agricultural ditches and canals to a more complex domestic water system. With increased visitation, water became valuable. As people began to settle in their summer cottages, the cattlemen recognized an opportunity to capitalize on the rising price of water due to the high demand. If there were to be visitors, there had to be a reliable water system.

With an ever increasing seasonal population came the shadow of urbanization. In April of 1905, the Estes Park Town Company was formed as a response to the growing population in Estes Park.[7] Many of the new residents of the area built summer cabins which remained deserted during the winter months. The Estes Park municipal water line was begun in 1904 by the James and Tritch families as well as Mr. F.O. Stanley to supply water to the rapidly expanding seasonal population.[8] In 1908 the Estes Park Water Company was founded under the management of Mr. C.H. Bond. The dry valley was well on its way to having a domestic water supply.

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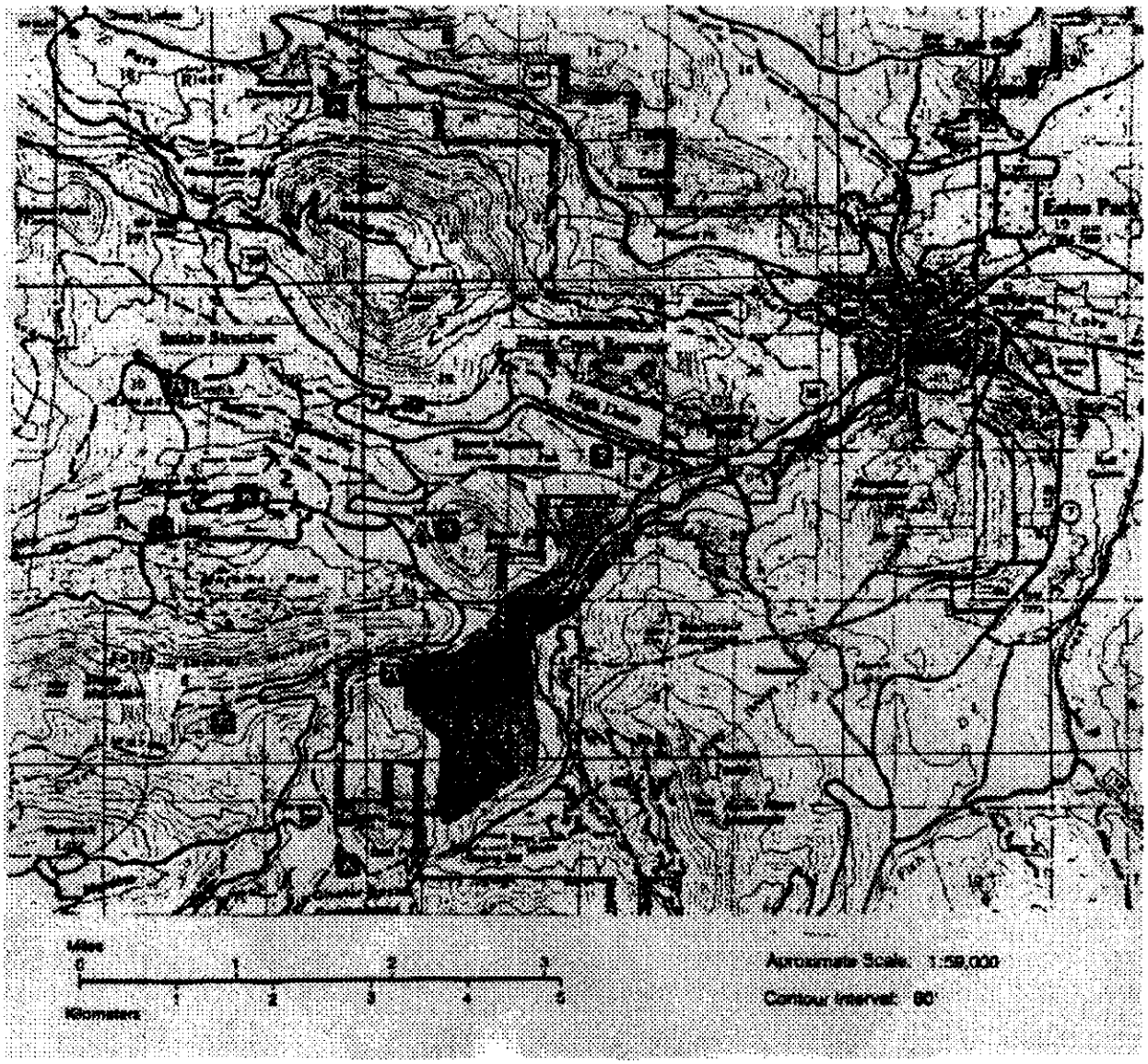
[6] June E. Carothers, *Estes Park: Past and Present*, (Denver: University of Denver Press, 1951), p. 63.

[7] Florence J. Shoemaker, "Story of Estes Park Region," p. 56.

[8] *Ibid.*, p. 54.



Map showing the location of the principal features of the Estes Park area. Taken from Trails Illustrated *Rocky Mountain National Park, Colorado* (1991).

However, many of the areas surrounding Estes Park, which were also developing at a rapid rate, were outside of the proposed municipal water system. This was the case near Beaver Creek on the southern slope of Deer Mountain Ridge. This area was known as High Drive and small parcels

of land were being sold to build summer cabins by area developers. One such developer was Pieter Hondius.

II. PIETER HONDIUS - PRACTICAL GENIUS

In many ways, Pieter Hondius was the prototype of a late nineteenth century Colorado settler. Hondius was born in 1873 in Holland. An asthmatic, he arrived in Denver in 1895.[9] Hondius, like many other Colorado immigrants in the late nineteenth century, came to the state to alleviate the suffering caused by asthma. The dry air made breathing easier for those with respiratory ailments. Hondius became a naturalized U.S. citizen. He then embarked upon a brief prospecting trip to Hahns Peak, Colorado near present-day Steamboat Springs. However, the venture proved unsuccessful and, like many other former miners, he decided to take up agriculture.[10]
Hondius began his agricultural enterprise in the Estes Valley. In 1896 he arrived in Estes Park and stayed at the James's Elkhorn Lodge. There he met his wife, Eleanor Estes James, daughter of William James. Hondius soon busied himself with acquiring land in the surrounding valleys. Eventually he would own nearly 2000 acres in Beaver Meadows and Horseshoe Park. By the turn of the century, Hondius had established the Beaver Ranch in Upper Beaver Meadows. He grew

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[9] Interview with Pieter Hondius, Jr. on August 14, 1997.

[10] *Ibid.* Pieter Hondius, Jr. reports that he found an assaying kit among his father's belongings and that the mining impulse soon panned out.

timothy hay in the meadows surrounding Beaver Creek to provide feed for his cattle. It was probably during this time that he built an irrigation ditch that would serve as a precursor to the water line.[11]

In her memoirs, Eleanor Hondius writes,

> He bought something like 2000 acres of land in the Park, and decided to go into the cattle business, but he did not reckon with ragweed and timothy, which gave him hay fever and eventually attacks of asthma. Then he would have to change altitude and go either to timberline on a camping trip or to Denver.[12]

That Pieter Hondius was still having health problems is confirmed by George Melvin who said that he often saw Hondius near Lawn Lake while he was on fishing trips.[13] While some of these trips may have been recreational in nature, chances are he was often visiting his higher altitude cabin in order to escape the ragweed and timothy. Mrs. Hondius reports that eventually "[b]ecause of his health, Mr. Hondius went to Arizona in the winter, and after little Pieter came, we spent every other winter in Hawaii."[14]

However, it was not merely allergies and hay fever that drove Pieter Hondius out of the cattle business. The climate in the Estes Valley was harsh and unsuitable for agriculture. Every winter

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[11] *Ibid.*

[12] Eleanor Estes Hondius, *Memoirs*, p. 32.

[13] See the text of "Interview with George K. Melvin; September 4, 1978" conducted by Elaine Hostmark and Ann Taylor Spurlock in the local history section of the Estes Park Public Library. The reference occurs on page 17. While at the library, take a moment to visit the Hondius Memorial Room dedicated to Pieter Hondius by his wife in 1935.

[14] Eleanor Estes Hondius, *Memoirs*, p. 33.

Hondius was forced to herd his cattle over Pole Hill to Loveland in order to find feed for them. This involved a 30 mile journey over rolling rocky hills to the Great Plains, over 2000 feet below the mountain valley. Tortuous snowstorms and raging winds often made the journey worse. This became a gargantuan effort every year. Much like other pioneers in the Estes Valley, Hondius began to shift his business from cattle and agriculture to catering to the summer tourists who began arriving in droves.[15]

The need for a water pipeline arose when Hondius began selling some of the lots on the lower end of his Beaver Meadow holdings to summer tourists who wanted to build seasonal cabins. This became known as the High Drive area. Hondius soon had nearly 200 cabins on what had been his property. This created a huge demand for summer water as the Estes Park municipal water line did not serve the area. Because he was responsible for supplying water to the seasonal residents, Hondius constructed the Buck Creek Reservoir in 1906.[16]

Pieter Hondius had no engineering training. He had graduated from the gymnasia in his native Holland, but beyond this, he had no formal education.[17] However, Hondius possessed the practical genius which many pioneers display. The "get the job done" innovation and insight is evident in the design and construction of the Hondius Water Line.

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[15] Interview with Pieter Hondius, Jr., August 14, 1997.

[16] *Ibid.*

[17] *Ibid.*

III. CONTRACTS, CONFLICTS, AND CUTTING THE LINE

The initial component of the Hondius Water System soon proved to be inadequate. According to the water user's contract, for $15.00 a year residents of High Drive could get all the domestic water God provided for the summer via the Hondius Water Line. The agreement was not made in terms of acre feet, but rather by the law of supply. Consequently, as development grew, there just was not enough water. This led Hondius to extend his the line westward to a point near his Beaver Ranch in Beaver Meadows in 1927. This extension provided the benefit of a relatively reliable stream that was easily diverted to serve the residents' water needs.

Despite the benefits that the water line provided, there were also a few drawbacks. George Melvin, speaking of the Hondius Water Line, said

> The water ran from there, of course, on down through the meadows. Well, there used to be good beaver dams on that thing; old man McPherson built a log dam over here, and he stopped the water; the thing got stopped all the way along Beaver Creek, which now, of course, is just a trail of dust. There hasn't been a drop of water in it. They've taken all from that water works down on the north side of High Drive down there, they just take it all.[18]

Melvin's quote, though somewhat ambiguous, speaks to the evidence of environmental change caused by such a diversion structure. The effects of the Hondius Water Line on Upper Beaver Meadows will probably remain unknown until natural flow is returned to the area for several years.

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[18] Elaine Hostmark and Anne Taylor Spurlock, "Interview with George K. Melvin; September 4, 1978," p. 17.

Eventually Pieter Hondius would winter in warmer and drier areas. During the summers, he continued running the water line in Estes Park. By 1929, Hondius had the largest private land holdings within the boundaries of Rocky Mountain National Park.[19] His holdings included much of the Beaver Meadows and Horseshoe Park areas, half of which the U.S. government eventually acquired.

Hondius is directly responsible for most of the pristine meadowlands that exist along eastern portion of Rocky Mountain National Park. Where ranches and lodges once stood, there are now unobscured vistas of Longs Peak. What was once a hay meadow is now a rich riparian zone bordered by aspen and frequented by elk.

But his contribution to Rocky Mountain National Park was not his only gift. He also brought the gift of water to many of the area's residents. The construction of the Hondius Water Line provided the only water to the High Drive area. Hondius died in 1934 in Palm Springs, California.

After his death, management of the water line fell to his wife, Eleanor Estes Hondius. She writes,

> I had to furnish water to 150 summer cottages from the first of May to the first of October. The contract stated that if "by act of God" there was not sufficient snow on the range or rain during the summer to supply the creeks and springs with water, and I had used all diligence to keep the line clean and in use, I could not be held responsible.[20]

Keeping the line "clean and in use" was a difficult task at times though. Pieter Hondius, Jr. recalls his father holding him with a pole over storage reservoirs in order to skim the pine pollen off the surface of

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[19]Patrick McKnight, "The Water Rights of Rocky Mountain National Park, A History," Manuscript. 1983. Rocky Mountain Regional Office, Denver, p. 24.

[20] Eleanor Estes Hondius, *Memoirs*, p.37.

the water. There would be occasions when the sumps backed up also. However, misuse by the residents of the High Drive area continued to be the biggest problem.

Section 4, Clause 3 of the contract between the Hondius family and the High Drive water users stated, "That none of the users hereunder shall have the right to use the same for sprinkling, irrigation, nor for water motors or water power of any kind, and that no water shall be wasted in any way." Yet, Mrs. Hondius notes,

> There was scarcely one of them, however, who did not transplant a lot of little trees or shrubs and try to raise a lawn. Johnny Adams took care of the pipeline for me, and several times at 10 or 11 o'clock at night, I would have to go get Johnny and take him to the Beaver to run down the person or persons who were draining our pipeline.[21]

Summer residents would often attempt to plant a lawn or garden in order to beautify their surroundings. This, being a violation of the contract allowing domestic use only, would lead to a loss of water rights.[22]

These problems prompted some High Drive residents to seek a more dependable water system. They first turned to the town of Estes Park for water. In 1945 Mr. Alwyn C. Haffner circulated a petition to High Drive residents asking for a 4 inch city water line. Eleanor Hondius, hearing of this effort, circulated her own petition and succeeded in convincing the majority of the residents that city water rates were too high.[23] High Drive would have to wait for city water. E.R. Anderson writes,

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[21] *Ibid.*, p. 37.

[22] Interview with Pieter Hondius, Jr., August 14, 1997.

[23] E.R. Anderson, *History of The High Drive Area*, (Estes Park: n.p., 1990) p. 4.

> It would have been a great improvement to have a water line constructed to the High Drive mostly at city expense and the residents therein would be enjoying a dependable water system. In retrospect, our community would probably have shifted to permanent year round residents rather than a seasonal populace. The number of homes would have increased significantly, we would probably be annexed to the Town of Estes Park, the roads would be paved, street lighting installed, raised taxes, patrolled streets and suddenly we'd have a little city rather than that semi-rural flavor that most of us love and enjoy. Perhaps Mrs. Hondius did us a favor - and then again???????[24]

It was a long wait. In 1975, a vote was taken among High Drive residents and the High Drive Water District was formed. In May of 1975, a bond election was held to raise the $357,000.00 to build a new water system.[25] This bond passed and High Drive seemed well on its way to having a city water line.

However, as is often the case in the West, the water issue got tied up in court. Craig Millis, a High Drive homeowner, had dug a well at considerable expense and did not want to pay a mil levy. He challenged the High Drive Water District and the case was in litigation for 10 years. By this time the costs had risen to $750,000.00. Another election was held, and the High Drive homeowners responded with a resounding 'no' to a new city water line. Through these trials the Hondius Water Line continued to supply water to area residents. Finally, as if in resignation, the High Drive Homeowners Association decided to improve the Hondius Water Line and spent several thousand dollars on upgrading the system.

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[24] *Ibid.*, p. 4.

[25] All information on High Drive after 1950 comes from E.R. Anderson's *History of The High Drive Area*, pp. 5-6.

Eventually the calls for a municipal water line would prevail. In 1996, William Butler reported that "The High Drive homeowners have acquired an alternate source of water, and are abandoning this system."[26] That year, the High Drive area finally managed to reach an agreement which allowed access to the municipal water line. A municipal spur line now feeds the Buck Creek Reservoir where water is distributed eastward via the Hondius system. Inside the Park boundary, the Hondius Water Line was cut.[27] Water from Beaver Brook runs downhill once again. Now instead of flowing up to High Drive, it follows its natural course, enriching the riparian environment in Beaver Meadows.

IV. "WATER RUNS DOWNHILL" - HOW THE SYSTEM WORKS

One of Pieter Hondius's favorite sayings was "Water runs downhill."[28] This saying sums up much of the design of the Hondius Water Line. However, one branch of the buried pipeline must ascend 260 feet to the Buck Creek Reservoir. Pieter Hondius made water run uphill by using advanced siphoning techniques as well as building up the water head. How this was accomplished has stumped modern hydrologists and engineers. E.R. Anderson writes, "Contemporary engineers

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[26] Letter from William Butler to James Hartmann, State Historic Preservation Officer, copy on file at Rocky Mountain Regional Office of the National Park Service in Denver, Colorado.

[27]Telephone conversation with Ken Czarnowski, Rocky Mountain National Park Hydrologist, September 18, 1997.

[28] Interview with Pieter Hondius, Jr., August 14, 1997.

who have reason to be exposed to the Hondius line have been impressed at the engineering that Hondius employed in using siphon techniques to get over rises in the landscape that gravity flow could not possibly accomplish."[29]

The Hondius Water Line runs for nearly 2.75 miles from the intake structure in Upper Beaver Meadows to the reservoir at Buck Creek.[30] There are 6.4 miles of total pipeline including all branches and supply lines in the water system. The system from Buck Creek eastward was completed in 1906 or 1907 while the extension to the intake was completed in 1927. Apparently Mr. Hondius extended the system westward to his holdings in Upper Beaver Meadows in response to a growing demand for summer water.

The Hondius Water Line diverts water from Beaver Brook in Upper Beaver Meadows eastward through the meadows via a pair of 2 inch underground pipes constructed of steel. The line primarily uses gravity flow techniques as it descends from an elevation of 8496 feet above sea level to a point just south of the Benchmark located at elevation 8364 on the Longs Peak Quad. At this point, the water line divides into two sections, north and south. The north line runs

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[29] E.R. Anderson, *History of the High Drive Area*, p. 5.

[30] All of the technical and descriptive sections of this portion of the report come from several sources. First, William Butler's "The Hondius-Beaver Water Delivery System, Rocky Mountain National Park, Larimer County, Colorado," pages 4 through 9 provided essential background information. Also see the Long's Peak Quad included in this report. This was supplemented by 3 maps (included in the HAER fieldnotes folder); a 1927 G.S. Newkirk map (thought to be original plans for pipeline to Beaver Brook), a 1939 map filed in the State Engineer's Office, and a 1967 Use Study Map drawn by the National Park Service. These maps are also available at the Technical Information Center at the Denver Office of the National Park Service. Also, visits to the site were made on August 5, 1997 as well as August 14, 1997. Field measurements were taken on August 5 with the assistance of Lysa Wegman-French, N.P.S. Historian. On August 14 Pieter Hondius, Jr. accompanied me providing background and site layout information.

primarily at the 8320 foot contour line to the Buck Creek Reservoir which is located at an elevation of 8260 feet above sea level. At one point this north line must cross a ridge by gaining 90 feet of elevation. This is probably accomplished using water pressure or "head."

The south line continues down Beaver Meadows to a point at 8000 feet above sea level. From here the line heads nearly due north, climbing 260 feet to the Buck Creek Reservoir. This climb is accomplished using a siphoning technique in addition to the head. Pieter Hondius, Jr. reports that his father often had problems with a sump located at the lower end of Beaver Meadows. When asked why his father designed the pipeline as he did, he merely responded "because it had to be done."[31]

From the Buck Creek Reservoir, the water is distributed eastward via another pipeline to the High Drive subdivision. In addition to the main line, several spur lines lead to springs on the south slope of Deer Mountain to augment the water supply. Because the water line was built from east to west, the valves are labeled numerically one to twelve beginning at High Drive and extending uphill to the intake structure.

Water proceeds through the Hondius Water Line in the following manner. Water flowing in Beaver Brook first encounters a 2 inch steel pipe which initially captures a small portion of the overall flow. This small pipe leads directly into the covered settling tank located near the intake. Several hundred feet after this initial pipe, the stream enters the main intake structure.

Pieter Hondius designed the intake to divert the entirety of the Beaver Brook flow. The brook enters a channel initially lined with broken rock on either side. This rock wall soon turns to

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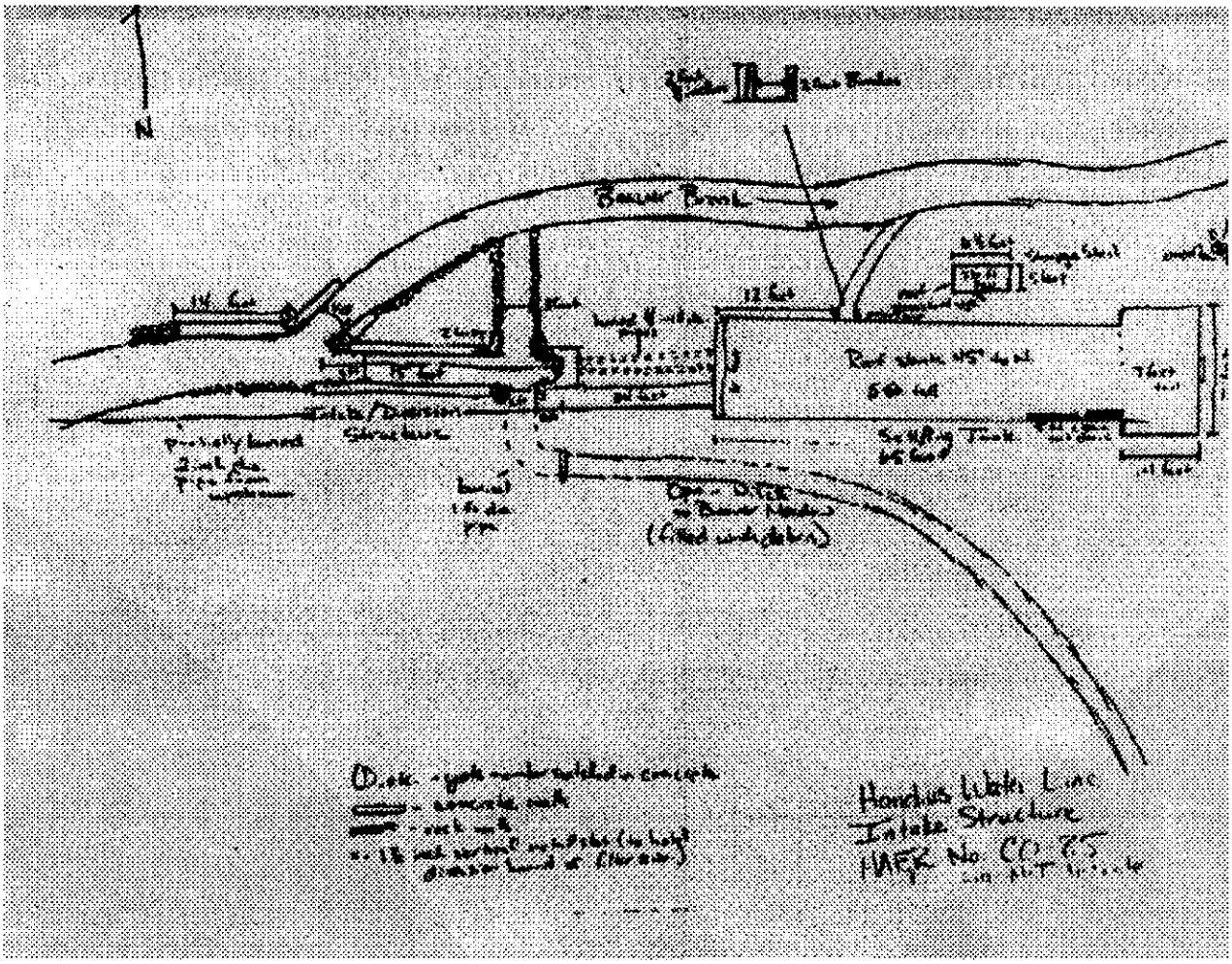
[31] Interview with Pieter Hondius, Jr., August 14, 1997.

concrete on the north side of the brook. The channel, concrete on north and rock wall on south, extends for 14 feet. There a Y-intersection is reached. To the left is Gate Number One, which is



Sketched map of the intake structure on Beaver Brook. The map is taken from field notes and is not drawn to scale.

designated as such by a '1' impressed on the surface of the concrete. Gate One is walled by poured concrete on both sides and has a concrete channel. The width of the channel at this point is approximately 4 feet. There are two sets of metal slots where boards can be inserted to divert the water flow. The channel leads back into the main channel of Beaver Brook.

Back at the Y-intersection, Gate Two runs due east from the previously mentioned channel. This gate has three vertical metal slots, each measuring 1 and 1/2 inches in width. Two of these slots were used for boards to control the flow of water while at least one was used to hold a filtering screen in place. From here water enters an open intake vault that is about 15 feet long and contains three control gates. The vault is 3 feet wide and 4 feet deep with 8 inch thick concrete walls and a poured concrete bottom. At one time the vault may have been covered with a large screen as there are several metal hinges on the surface of the concrete.

Gate Three branches off to the north and was probably used as an overflow gate for the intake system. It also has concrete walls as well as two sets of metallic grooves into which boards could be placed. This channel leads directly into Beaver Brook. A rock wall that extends 45 degrees to the southwest completes a triangle with the Gate One Channel.

Gate Four is located at the east end of the vault and is shaped in the form of a half octagon. Two metallic grooves are used to control the intake. Two intake pipes, each 4 inch in diameter and made of steel, protrude from the eastern concrete wall. The northern of these had a filter screen extension on it in 1996.

Gate Five branches to the south, opposite of Gate Three. This gate also has the two metal grooves and opens into a 1 foot diameter steel pipe. This large pipe opens into a ditch that begins about 10 feet to the southeast of the intake structure. This ditch is currently overgrown and filled with debris. Walking its length reveals that it extends to the southeast, contouring below what the National Park Service refers to as "Apache Fort" (Benchmark 8463') and ends in a natural drainage near the head of Beaver Meadows. Here 'water ran downhill' into the meadow, irrigating Hondius's fields. This was probably the initial component of the water system in the upper meadow.

From the intake structure, the two buried 4 inch pipes extend from Gate Four for about 24 feet to the settling tank. This covered water vault contains one 6 foot deep settling tank constructed of concrete. The complete structure extends for 65 feet and is 6 feet wide. It is of wood shingle construction and has a shed roof covered with rolled asphalt that extends at a 45 degree angle slanting to the north. The low building is about 5 feet tall on the south elevation. The eastern end of the building has an extension with a full gabled asphalt roof. This extension stands 7 feet tall and is 14 feet long by 7 feet wide. A concrete step leads to an east-facing doorway which provides access into the structure. Just west of the extension on the south face of the structure are two clean-out doors. Each of these are about 5 feet wide. On the north end of the building an overflow channel is located approximately 12 feet from the western edge of the building. The overflow channel consists of a small screened opening in the wall which connects to a 2 foot 8 inch wide concrete channel. The channel empties into the Beaver Brook streambed.

Just to the north of the settling tank is a small storage shed of board and batten construction. It measures 6 and 1/2 feet long by 5 feet wide and is 7 and 1/2 feet tall. This shed roof is also slanted

at a 45 degree angle dipping to the north and is covered by rolled asphalt. Inside this shed were found screens and boards for controlling the flow through the diversion structure as well as other articles of maintenance for the pipeline.

From the covered settling tank, water flows southeast via two 2 inch diameter steel pipes to Spring Number One. This spring is located approximately 1000 feet southeast of the main intake structure. Any extra water in the settling tank is released into Beaver Brook via a second overflow channel, which opens approximately 6 feet northeast of the covered settling tank.

The wooden shingled shed that covers Spring Number One is the only remaining springhouse constructed by Pieter Hondius. The foundation is of broken chunks of granite, probably from the surrounding hillsides. The building measures 8 feet 3 inches wide by 6 feet 4 inches long and stands about 10 feet tall. The shingles are made of cedar and the roof slopes to the north at a 45 degree angle and is covered by rolled green asphalt. A door is located on the south elevation. This springhouse may have been modified by the National Park Service in the 1950's, but the foundation as well as the walls are original.[32]

From Spring Number One, two parallel 2 inch water pipes run down Beaver Meadows for about a mile and a half to Valve Number 8. Here the water line splits. The North Main Pipeline runs nearly at contour to the Buck Creek Reservoir and is also a 2 inch steel pipe. The South Main Pipeline drops into the lower end of Beaver Meadows to a point just west of the modern-day Park Headquarters and then climbs 260 feet in elevation north to the Buck Creek Reservoir. The south line is only 1 and 1/2 inches in diameter and the force of water through the smaller pipe may

[32] Most of the information on this springhouse comes from Pieter Hondius, Jr.

account for some of the pressurizing action required to climb the grade to the reservoir.

The Buck Creek Reservoir building contains two tanks, 6000 and 8000 gallons respectively. The building measures 28 feet long and 18 feet wide and sits on a poured concrete foundation. The eastern portion of the building has a gabled roof and is the original structure built in 1906 or 1907.[33] It measures 18 feet by 10 feet and is constructed of milled wooden boards attached to a wood superstructure. There is a 2 foot by 3 foot access door in the east elevation. The western portion of the building is similar in construction but has a shed roof instead of a full gable. It measures 10 feet long by 8 feet wide and has a 3 foot by 3 foot access door midway along the south elevation. This portion of the structure was built by a later owner according to Pieter Hondius, Jr. Both portions of the building are covered by rolled green asphalt shingles on the roof.

From the Buck Creek Reservoir, water travels southeast into the High Drive area via another pipeline. The line extends for nearly a mile. Cabin owners were required to "place a shut-off or stop-box at some convenient place outside of each cottage and accessible to the party of the first party [the water line owners]."[34] Water could be used for domestic purposes only according to the contract. However, this rule was often violated.

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[33] *Ibid.*

[34] Quote from a copy of the contract that water line users signed with Pieter Hondius.

V. CONCLUSION

For fifty years the Hondius Water Line supplied the High Drive area with the water necessary for summer occupancy. What started as an agricultural ditch in Upper Beaver Meadows became a successful tool in developing the tourist-related industry of the Estes Valley. In the early 1950's June Carothers observed "Today Estes Park is no longer a pioneer park: it is a vacation resort for the nation. It was through the pioneer encouragement of the tourist trade that such a transition was possible."[35] Pieter Hondius was one such pioneer. His effort at creating a unique pipeline to supply water to summer tourists represents the economic challenges that face the West even today.

Currently plans are underway to remove the roofs of the intake structures and fill in the concrete foundations with rock. Water previously diverted to High Drive has been returned to Beaver Brook, enhancing the riparian habitat in Upper Beaver Meadows. There are plans to erect interpretive signs describing the Hondius family and Water Line near the parking area in Upper Beaver Meadows. The Buck Creek Reservoir will remain standing for 25 years.[36] The pipeline, much like the park before it, will pass from practical use to that of education and enjoyment.

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[35] June E. Carothers, *Estes Park: Past and Present*, p. 55.

[36] Conversation with William Butler, Rocky Mountain National Park Archaeologist and Cultural resources Manager, August 5, 1997.

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